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FOREST WORKER



March, 1927

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Announcements

Forest Soils Section to be Part of International Soil Congress

A section on forest soils will form a part of the International Congress of Soil Science to be held at Washington, D. C., in the United States Chamber of Commerce Building, June 13-22. Papers already on the program of the section deal with erosion, podsol formation in spruce forests, silviculture as a factor in retaining soil fertility, soil surveys and forest confiscation, and control of water level in swamps. It is expected that several foreign foresters who have been working in forest soils will attend, including Prof. Heinrich Hesselman, of Sweden.

Civil-Service Examination for Silviculturist

A nonassembled examination for the four grades of silviculturist is announced by the Civil Service Commission, to close early in May. The registers to be established by this examination, with salary scales, are as follows: Senior silviculturist, \$5,200 to \$6,000; silviculturist, \$3,800 to \$5,000; associate silviculturist, \$3,000 to \$3,600; and assistant silviculturist, \$2,400 to \$3,000. Positions to be filled from the register on this examination will be at the new forest experiment stations to be established this year in the Ohio-Mississippi Valley and the Middle Atlantic States, as well as at other forest experiment stations.

Pine Pollen Wanted

The Eddy Tree Breeding Station, Placerville, Calif., will greatly appreciate any assistance in obtaining pollen of species of pines that do not occur near Placerville; that is, of species other than western yellow pine, Jeffrey pine, digger pine, sugar pine, western white

pine, and knobcone pine. Pollen of foreign species will be especially welcome. Anyone wishing to cooperate with the station by sending pollen is asked to notify it in advance as to the species. A special vial will be sent from the station to protect the pollen in shipment.

Nature Lore School at Briarcliff Manor, N. Y., in June

The eighth annual gathering of the Nature Lore School will take place at Camp Andree, the National Girl Scout Camp, Briarcliff Manor, N. Y., June 17-30, inclusive. Dr. William G. Vinal, of the New York State College of Forestry, Syracuse University, will act as director, and will be assisted by a staff of nature specialists provided through cooperation of the Girl Scouts, Boy Scouts, and Camp Fire Girls, the Buffalo Society of Natural History, and the Palisades Interstate Park. The object of this school, which was organized in 1920 under the auspices of the National Association of Directors of Girls' Camps, is to train nature teachers, nature counsellors for summer camps, nature guides, scout naturalists, and playground leaders. The first week of the 1927 course will be devoted to forestry study and the second week to methods in nature guiding. Information about the course may be obtained by addressing Miss Elin A. Lindberg, National Girl Scout Headquarters, 670 Lexington Avenue, New York City.

Texas Wants Long-Leaf Pine Mast

The Texas Forest Service would like to locate some long-leaf pine mast for planting on its demonstration forest near Kirbyville.

Because the edition of this periodical is necessarily limited, its free distribution outside of the Government service is restricted to such persons and organizations as State forestry and conservation officials, State agricultural extension directors, faculties and libraries of forest schools, and forestry associations. Others desiring to obtain copies of the *Forest Worker* can do so by sending 5 cents for a single copy or 25 cents for a year's subscription to the Superintendent of Documents, Government Printing Office, Washington, D. C. Foreign subscriptions: Yearly, 35 cents; single copies, 7 cents.

Material offered for publication in the *Forest Worker* should be addressed to the Editor, U. S. Forest Service, Washington, D. C.

FOREST WORKER

Washington, D. C.

MARCH, 1927

Vol. 3, No. 2

American Forest Week

Chairmen of State Committees

A list of the chairmen of State committees for the observance of American Forest Week is given below. In some cases acceptances have not been received as the Forest Worker goes to press, so that there is a possibility of a few changes.

Alabama: John L. Kaul, Kaul Lumber Co., Birmingham.
Alaska: Judge Charles E. Bunnell, president Alaska Agricultural College and School of Mines, Fairbanks.
Arizona: Fred J. Elliott, president Chamber of Commerce, Phoenix.
Arkansas: F. W. Scott, Huttig.
California: Gov. C. C. Young, Sacramento.
Colorado: A. V. Fagerstrom, Pueblo.
Connecticut: T. S. Woolsey, jr., care of Connecticut Forestry Association, New Haven.
Delaware: Dean W. A. McCue, University of Delaware, Experimental Farm, Newark.
Florida: A. A. Coult, secretary Fort Myers Chamber of Commerce, Fort Myers.
Georgia: Henderson Hallman, 732 Candler Building, Atlanta.
Idaho: Dean F. G. Miller, University of Idaho, Moscow.
Illinois: E. H. Burgess, Edward Hines Lumber Co., Otis Building, Chicago.
Indiana: Stanley Coulter, 213 South Ninth Avenue, Lafayette.
Iowa: E. T. Meredith, Meredith Publications, Des Moines.
Kansas: Albert Dickens, Manhattan.
Kentucky: Tom Wallace, Louisville Times, Louisville.
Louisiana: Henry E. Hardtner, Urania.
Maine: Forrest H. Colby, Bingham.
Maryland: De Courcy Thom, 405 Maryland Trust Building, Baltimore.
Massachusetts: Harris A. Reynolds, 4 Joy Street, Boston.
Michigan: T. F. Marston, East Michigan Development Bureau, Bay City.
Minnesota: Mrs. Willard Bayliss, Chisholm.
Mississippi: Mrs. G. H. Reeves, 831 Madison Street, Jackson.
Missouri: Julius Seidel, Seidel Lumber Co., St. Louis.
Montana: Rutledge Parker, State forester, University of Montana, Missoula.
Nebraska: Hon. Samuel R. McKelvie, Lincoln.
Nevada: A. B. Flickinger, Red River Lumber Co., Reno.
New Hampshire: W. R. Brown, Berlin.
New Jersey: C. P. Wilber, State forester, Trenton.
New Mexico: Dana Johnson, editor Santa Fe New Mexican, Santa Fe.
New York: Hon. John D. Clarke, New York State Forestry Association, 91 State Street, Albany.
North Carolina: Col. Joseph Hyde Pratt, Chapel Hill.
North Dakota: C. B. Waldron, State Agricultural College, Agricultural College.
Ohio: Mrs. W. W. Milar, 405 Crosby Street, Akron.
Oklahoma: John Easley, Ardmore.
Oregon: F. A. Elliott, State forester, Salem.
Pennsylvania: George H. Wirt, Department of Forests and Waters, Harrisburg.
Rhode Island: Howard L. Hitchcock, West Kingston.
South Carolina: C. F. Prettyman, president State Forestry Association, Summerville.
South Dakota: C. C. O'Harra, president School of Mines, Rapid City.
Tennessee: Rutledge Smith, Tennessee Railroad Co., Nashville.
Texas: R. A. Gilliam, 901 Cedar Hill Avenue, Station A, Dallas.
Utah: Mark Anderson, Provo.
Vermont: K. R. B. Flint, Northfield.
Virginia: Chapin Jones, State forester, Charlottesville.
Washington: Dean Hugo Winkenwerder, University of Washington, Seattle.
West Virginia: George P. Whitaker, Wheeling.
Wisconsin: F. W. Luening, managing editor, Milwaukee Journal, Milwaukee.
Wyoming: A. G. Crane, president University of Wyoming, Laramie.

American Forest Week Publications

The following special publications have been issued by the United States Forest Service for use during American Forest Week, 1927. No charge is made either for the publications or for postage.

President's Proclamation of American Forest Week.—One page. For use as poster in schools, post offices, libraries, and other public places.

Present Needs in National and State Forestry.—By William B. Greeley, Forester, U. S. Forest Service. An 8-page presentation of the salient facts regarding public and private forest-land ownership and policies, the need for more State forests and for State forestry movements, and recent progress in State forestry legislation.

Forestry Facts.—A 16-page pamphlet containing short items, paragraphs, and handy information for use by newspapers and by speakers, teachers, and others interested in preserving and perpetuating the forests. This pamphlet is of essentially the same character as the *Forestry Facts* issued in 1926, but contains much fresh material.

Program for Observance of American Forest Week, April 24-30, 1927, at School, Boy Scout, and Four-H Club Meetings, and Other Assemblies.—A 16-column folder, 3¾ by 8½ inches, containing program suggestions and material in the form of readings, songs, and recitations; largely identical with the program issued in 1926.

A Forestry Program for Women's Organizations.—A 14-page pamphlet, 3¾ by 8½ inches, containing material for a club or other meeting in the form of papers on various aspects of forestry, verse readings, brief verse extracts, and a song.

Trees a Money Crop.—A 6-page leaflet, 5¼ by 9 inches, containing an extract from an article by the president of the Federal Land Bank of Springfield, Mass., pointing out the reasons why a farm woodland in good condition is a financial asset.

Children Will Need Timber—Grow Trees.—A card, 4¾ by 6½ inches, showing on the face the legend "Children Will Need Timber—Grow Trees—Save Them from Fires," with illustrations in silhouette of the growth and some uses of trees, and on the reverse text material on the benefits of the forest.

Envelope Stuffers.—*American Forest Week*, April 24-30, 1927, with a drawing and three printed slogans, 3 by 5¼ inches; *Keep the Forest Green*, with a drawing and a brief statement on the value of the forest, 3 by 5¼ inches.

Bookmark.—On the face "Grow Trees" in large letters, with a drawing, green on a gray background; on the reverse printed slogans, 2½ by 6¾ inches.

State Forestry

Delaware Forest Conservation Commission Reports

The Commission for the Conservation of Forests in Delaware, created by an act of the general assembly of 1925, has made its report to the legislature of 1927. The commission recommends that there be created in the Delaware government a State forestry department, provided with adequate funds and empowered to cooperate with forest land owners, the Federal Government, and neighboring forestry departments, to prevent and extinguish forest fires, to purchase land for State forests, and in general to control all matters relating to forestry in the State.

The commission also recommends that any non-productive lands owned by the State be made State forests. Here special mention is made of the State-owned sand-bar land that stretches almost without interruption along Delaware's entire ocean front. Other recommendations are legislation for reducing taxes on land bearing growing timber and for the protection and conservation of the holly tree, which in the lower counties of the State supports a considerable industry.

A bill introduced in the Delaware Legislature on the basis of this report would create a State forestry commission composed of the governor and four persons appointed by him, the governor to have a vote only in case of a tie. Under the terms of this bill a State forester would be chosen by the commission to hold office at its pleasure at a salary fixed by it. The State forester would be authorized and empowered, with the commission's approval, to appoint an assistant forester and such other officers and assistants as might be necessary. The sand-bar lands owned by the State would be created a State forest, and the State forestry commission would be given the power to acquire lands for additional State forests by purchase or gift. The commission would be designated as the agency to cooperate with the Federal Government under the terms of the Clarke-McNary law. A comprehensive system of forest fire protection would be provided, the State forestry department would be authorized to raise forest planting stock and to distribute it to the public at cost, and reforested lands when classified as auxiliary State forest lands would be assessed at not more than \$1 an acre, the timber grown on such lands being subject to a yield-tax of 10 per cent.

Texas Legislative Committee on Forestry Reports

The recommendations for a State forestry program which the Texas Legislative Committee on Forestry submitted in its recent report are as follows:

1. While appreciative of the cooperation of the Federal Government in conserving our timber resources and encouraging practical reforestation of our deforested lands, we firmly believe that the constructive and judicious basis of cooperation between the Nation and the State in forest protection and reproduction should be that which will leave the control of such cooperative operations to the State, and which will leave the ownership of all lands dedicated to reforestation to the State and its citizens.

2. * * * The State should as soon as possible acquire such number of State forest areas, each of sufficient size to permit of economical protection and administration, as would answer the purpose of practical demonstration in forest renewal and management. Such demonstration forest farms or areas might very profitably embrace as much as 100,000 acres distributed as to character of timber growth. * * *

3. Believing that a policy recognizing the fullest possible participation of our citizens in reforestation enterprises is the most judicious, we recommend such legislation as will make it feasible for private citizens and private capital to undertake the reproduction of timber upon the deforested lands of the State. * * *

(a) A constitutional amendment adhering to the following form: "For purpose of encouraging the conservation of the timber resources of the State and providing for the continuous production of a timber supply equal to the needs of the people in home building, farm requirements, and the developing of commerce and industry, the legislature is empowered to enact just laws for the taxation of lands set aside for purposes of timber growing and for the supervision of such lands and the administration of such laws."

(b) A forestry code to be enacted under authority of the proposed constitutional amendment should provide for the creation of a nonsalaried State board of forestry vested with authority to direct the work of the State forester; to accept registration of lands dedicated by private owners to timber growing; to determine a just valuation of all such registered land for taxation; to prescribe regulations and determine the

extent of public and private cooperation in the protection of said lands from fire; and if deemed essential, to readjust such valuations of registered lands for tax purposes at stated periods and when the timber is ready to market; to require the payment, by the owners of all such registered lands, of a severance or yield tax on a graduated scale. Such enabling act would necessarily provide for the collection of the deferred tax in the event lands dedicated to timber growing are sought to be withdrawn from the registration before maturity of the crop.

4. Pending the adoption of the constitutional amendment and the enactment of legislation so authorized, the existing State forestry department should be more adequately supported. Cooperative work in forest fire prevention and control is necessary to secure the reproduction of pine trees over large areas and to prevent the young pine timber from being destroyed. * * * The State should make available for the protection work a sum at least sufficient to match the fund the Federal Government is ready to designate for this purpose. * * *

The work already under way relative to assisting the timberland-owning farmers and farmers in the treeless sections should be given increased recognition. * * *

In view of the serious insect infestation now affecting the remaining merchantable pine timber in east Texas, * * * the State should take steps to work out measures for the control of such injurious insects and make such information available to the timber owners.

In recommending reforestation by private owners of timber lands, the committee recognizes the obstacles that will certainly be raised from time to time of continuity of ownership of dedicated lands, and the division of estates and distribution of interests. This condition is calculated to cause the withdrawal of many tracts of lands from reforestation purposes. To minimize this difficulty as much as possible the committee would recommend that special effort be made to provide for financing timber-growing projects, under registration with the State, through some form of long-time loans at low rate of interest.

Two Forestry Acts Passed in Vermont

Two forestry acts have been passed by the Vermont Legislature of 1927. One will permit the commissioner of forestry to purchase additional land for forest nurseries, and the second authorizes the governor to proclaim a closed fire season during periods of extreme drought. In such a closed season it is unlawful to build a fire on or near forest land. Anyone violating this regulation will be liable for all damages resulting from his offense and will be subject to imprisonment for not more than 30 days or a fine of not more than \$50, or both.

Forestry Bill Passes South Carolina Senate

A forestry bill passed the Senate of South Carolina on February 18 with a large majority. The bill would provide for the creation of a State forestry commission of five members and for the employment of a technically trained State forester. Under the provisions of this bill the State forestry activities would be supported through an annual appropriation of \$10,000, instead of through a severance tax such as was proposed in the forestry bill which the South Carolina Legislature rejected at its last session. Immediately upon its passage in the senate the bill was sent to the house for consideration.

Allotment of 1928 Clarke-McNary Funds

Allotments of Federal funds to the States for forest-fire cooperation in the fiscal year 1928, recently approved, will include both regular and extra allotments. The former in every State will be 8.5 per cent of the estimated cost of adequate protection, as compared with a rate of 7.4 per cent during the present fiscal year. For extra allotments a fund of about \$110,000 will be available, which will be distributed to the States on the basis of State and private effort in forest fire protection.

The allotment for the forest tax study will be increased from \$36,000 for the present fiscal year to \$50,000 for the fiscal year 1928.

Big Spring Orders for New York Planting Stock

New York tree planters are ordering little trees from the State conservation department at the rate of 100,000 a day, and by mid-January had run the total up to about 9,000,000. A large percentage were repeat orders—the best possible sign of successful business. More trees had already been ordered for municipal or community forests, including a number of new county forest projects, than in any previous year.

More than two-thirds of the cities in the State, and many towns, villages, and school districts as well, have started forests of their own. New York City, Rochester, and Glens Falls have more than 1,000 acres each of watershed-protection forests which will in time supply lumber and wood. The village of Carthage has a planted protection forest of more than 600 acres, developed through annual plantings begun 16 years ago. The village of Livonia has recently purchased as a reservoir site a partly forested area of about 200 acres in the township of Conesus on which it plans this spring to make an initial planting of 20,000 trees.

Reforestation work has been done on county land in 28 counties of New York, and several counties have adopted definite reforestation programs. Warren County has planted 155 acres in a 350-acre forest project and Otsego County has adopted a 10-year reforestation plan involving the expenditure of \$50,000. The board of supervisors of Essex County has appointed a county forestry committee to work with the conservation department in reforesting county lands, and in Monroe County a park commission has begun to examine areas suitable for development as county forests with a view of timber production, game protection, and recreational use.

An unusual private planting project for which trees are to be furnished by the New York Conservation Department is that of Wilson M. Powell, of Chatham, Columbia County. Mr. Powell, who has been planting trees since 1915 and has already put out 79,000, plans this spring to plant 10 blocks of 2,000 trees each, of species including red pine, Scotch pine, European larch, Carolina poplar, white spruce, Norway spruce, black locust, balsam, and white cedar. Each block will have a frontage of 200 feet on the road. It is expected that this plantation will in time afford an opportunity to study in one forest the growth of the different varieties, as well as being a demonstration of tree planting to all who pass on the road.

The New York Conservation Department charges \$2 per 1,000 for 2-year-old seedlings and \$4 per 1,000 for 3-year-old transplants, f. o. b. nursery, for planting on private land. For trees to be planted on public land no charge is made except for transportation.

County Forestry in Winnebago County, Illinois

Citizens of Winnebago County, Ill., pay an annual tax of 1 mill for the purchase and development of county forests. For the present fiscal year about \$64,000 has been made available for these purposes, including \$25,000 for the purchase of land. A balance of \$35,000 for land purchase remains in the county treasury from last year. The county forests now total 701 acres, of which two-thirds is covered with heavy virgin timber. The county raises in its own nursery the planting stock needed for these forests, and in the spring of 1926 began to distribute planting stock to private landowners. This year the county forester, Tange Lindquist, is taking over the work of protecting and planting roadside trees.

Timber Along Michigan Highways

The State Highway Department of Michigan is going halves with the Marquette County Road Com-

mission in a \$10,000 purchase of timbered land along one of the State trunk line highways. The department has for several years given considerable attention to the landscaping of roadsides, its standard right of way width ranging from 100 to 150 and even 200 feet. It is preserving natural timber growth along highways and hopes soon to start an intensive program of tree planting. In a few previous instances it has bought land in the northern part of the State in order to preserve standing timber along trunk line highways.

The Kent County, Mich., Road Commission is developing roadside tree planting and care and is maintaining timbered county parks as tourist camps and roadside recreation centers. A county nursery supplies trees for planting both along the highways and in the parks. At present three parks with a combined area of about 102 acres are being maintained by the road commission.

Cooperative Fire Protection in Kentucky

Three cooperative forest protective associations are under formation in Kentucky. About 400,000 acres of forest land are represented by the 59 individual members. The work of protecting these lands from fire is directed by the assistant State forester and one district forester. Each protective area, which may be from 50,000 to 200,000 acres in extent and which is organized without regard to county lines, has a chief warden in charge, with a number of deputy wardens heading "registered crews" of volunteer fire fighters.

For the fiscal year 1927 the total funds for fire protection work, including the State appropriation, Federal allotment, and contributions of landowners, amount to \$23,700, or approximately one-tenth of the amount estimated to be necessary for adequate protection. The counties do not contribute. Each timberland owner is asked to contribute at least 50 per cent of the expenditure for the protection of his own lands.

Forestry Exhibit at Farm Show

A forestry exhibit by the Pennsylvania Department of Forests and Waters at the Eleventh Annual Farm Products Show, held in Harrisburg in January, was viewed by about 25,000 visitors. Orders were taken on the spot for 143,850 trees for planting this spring. The 100 applicants included residents of 28 counties. The orders call for 65,450 white pine, 28,800 Norway spruce, 13,500 European larch, and smaller numbers of red oak, Scotch pine, shortleaf pine, tulip poplar, pitch pine, white spruce, American elm, and hardy catalpa. An additional order was received for 1,500 each of white and red pine to be delivered in the spring of 1928.

Species Indicator for New York Tree Planters

A tree-planting indicator for New York State planters was perfected by Clifford R. Pettis, superintendent of State forests, shortly before his death. The device, which resembles a photographic exposure chart, consists of a celluloid card about $3\frac{3}{4}$ by $2\frac{1}{2}$ inches with a movable disk in the center. Through its use the prospective planter easily learns which of eight forest species are recommended for planting in each of six types of soil for the production of saw timber, pulpwood, or posts, poles, and ties. Inquiries in regard to obtaining copies should be addressed to Whitehead & Hoag, 74 Chapel Street, Albany, attention of Mr. Thomas.



In the past 28 years 36,254,284 trees have been planted on the State forests of Pennsylvania. This number includes 21,417,427 white pines, 5,157,879 Norway spruce, and 3,476,004 Scotch pine. All but about 5 per cent are conifers. The areas planted total 427.2 acres. The cost of planting averaged \$10.81 per acre and \$8.59 per thousand trees. The number of trees planted annually was greatest during the period 1910-1919, inclusive, reaching its peak of more than 6,000,000 in the year 1918.

Young trees from the newly-established State forest nursery of Alabama were distributed in 1926 to 30 farmers in Bibb, Chilton, Shelby, and Perry Counties. It is the policy of the Alabama Commission of Forestry to issue to farmers without charge enough seedlings of suitable species to plant from one-half to 1 acre of ground, and to furnish planting stock in excess of this quantity at cost.



An education bureau has just been organized in the Georgia Forestry Department, with Bonnell H. Stone, chairman of the executive committee of the State board of forestry, as director. Definite funds have been budgeted for the purpose of publishing forestry educational publicity material and distributing it to teachers, civic clubs, etc., throughout the calendar year 1927.



A gift of \$2,000 has been received by the Connecticut Park and Forest Commission from the White Memorial Foundation, through Alain C. White, for the purchase of additions to the Mohawk State Forest. This forest, made up mostly of gifts from the foundation, now has an area of 2,400 acres.

Education and Extension

Research Professorship Endowed at Cornell

A research professorship in forest soils in Cornell University has been endowed by the Charles Lathrop Pack Forestry Trust, a fund set aside for the advancement of forestry by C. L. Pack and administered by his son Arthur Newton Pack as trustee. The endowment is \$130,000, and additional funds have been given by the trust for operating expenses of the investigations to be undertaken. The work will deal primarily with the chemistry and biology of forest soils and will be done in the New York State College of Agriculture.

Forestry Educators Confer at Philadelphia

The third annual conference of forestry educators, held in Philadelphia December 28, 1926, brought together members of the faculties of 12 forest schools. An effort was made, through discussions in which the school men were joined by members of the United States Forest Service, to determine what changes should be made in the forest school curricula to meet modern educational tendencies. The feeling was generally expressed that the curricula are already so

crowded that additional subjects can scarcely find place. The members of the conference seemed to be agreed, however, that the schools can go farther in giving thorough training in undergraduate courses than they do at present. It was stated on behalf of the Forest Service that the service needs men well trained in the fundamentals rather than in the so-called practical subjects, and men who have been taught to think out problems for themselves. The civil-service examination for junior forester, through which 50 or more new men are chosen each year for Federal forestry work, was discussed at length.

Idaho Leases Arboretum Site

A 27-acre tract adjoining the campus of the University of Idaho has been leased as an addition to the university's forest nursery and arboretum. It will be used primarily to grow planting stock for distribution to farmers under the provisions of the Clarke-McNary law. The part not needed at once for this purpose will be used for the present to demonstrate methods of establishing and caring for farm woodlands and wind breaks.

Demonstration Forest Presented to New York State College

A recent gift to Syracuse University by the Charles Lathrop Pack Forestry Trust is a tract of timberland north of Glens Falls, N. Y., in the Lake George section of the Adirondacks, fronting on the Hudson River and extending more than two miles on each side of the main highway from New York City to Montreal. The property contains some fine specimens of virgin white pine. It is to be placed under management by the New York State College of Forestry as a demonstration forest.

Forest Protection Meetings in the Blue Mountains of Oregon

The forest-protection campaign carried on in Oregon during the past year by Hon. W. V. Fuller, representing the Western Forestry and Conservation Association, and George E. Griffith, of the United States Forest Service, in the fall reached the Blue Mountain region of eastern Oregon. There it penetrated the byways of the Umatilla, Wallowa, and Whitman National Forests and adjacent communities. The forestry films carried by the traveling lecturers were the first motion pictures some of the Blue Mountain children had ever seen.

Late in the winter Mr. Fuller and Ranger Albert Wiesendanger, of the Mount Hood National Forest, extended the campaign throughout Douglas County, in the southwestern part of the State, presenting programs of talks, motion pictures, and lantern slides at many schoolhouses.

Mississippi Schools Acquire Demonstration Plots

Ten agricultural high schools in Simpson County, Miss., have introduced forestry as a major study, setting aside plots of from 10 to 40 acres apiece for forestry demonstration purposes. County plans for 1927 include the laying out of these plots and the inauguration of the study of forestry by the schools and the 4-H Club boys under the supervision of H. C. Mitchell, extension forester. District Forester K. E. Kimball will be located in Simpson County and will oversee the study of these demonstration plots. As soon as the forestry work in Simpson County has advanced to the point at which it can be turned over to the local authorities another district will be selected for like intensive work, and so throughout the State.



An enrollment of 165 is reported by the College of Forestry of the University of Washington. This is about 10 per cent more students than were enrolled there last year.

Woods Work Now Required for Boy Scout Merit Badge in Forestry

By WARD SHEPARD, U. S. Forest Service

The requirements for Boy Scout merit badges in forestry and conservation have been modified in accordance with suggestions of the United States Forest Service. The requirements that a scout must now fulfill to win the forestry badge are as follows:

1. Identify 25 kinds of trees when in leaf, or 15 kinds of broad-leaved trees in winter.
2. Collect and identify 10 different kinds of wood and be able to tell some uses for each which he himself has observed.
3. Collect and identify seeds of 15 kinds of trees.
4. Grow 10 seedlings of each of two coniferous and two broad-leaved trees, from seed that he himself has collected. Tell how the seed was collected, extracted, and planted.
5. Point out in the woods, or describe from observation, the damage that fire does to tree trunks, bark, roots, and seedlings (coniferous and broad-leaved).
6. Tell how to build a trench to stop a ground fire; how to stop a surface fire; how to dispose of limbs and other debris from timber cutting in order to reduce fire danger; how to locate a forest fire by triangulation.
7. Lay off a plot of one-quarter acre in the woods and tag all trees that should be cut in order to be utilized and to allow the remaining trees to make better growth or reseed the area. Identify each tree and give the reason for removing or leaving it.
8. Present evidence that he has done something specific in furtherance of forestry, such as—
 - (a) Planting 100 trees, preferably seedlings grown by himself.
 - (b) Thinning or "weeding" (cutting out worthless or inferior trees) one-quarter acre of young or medium-aged woodland.
 - (c) Helping to extinguish a ground and surface fire.
 - (d) Collecting and burning 500 tent caterpillar egg masses.

To win the conservation badge a scout must fulfill the following requirements:

1. Know the principal natural resources of his county and give the essence of any conservation laws affecting them.
2. Know for his region the principal game birds, animals, and fish, the seasons during which they are protected, how they are protected, and the results of protection.
3. Describe in detail one common game bird, animal, and fish in his locality, and tell its habits of living, feeding, and rearing its young.
4. Present at least two photographs taken by himself showing some phase of conservation of natural resources and be able to describe the conservation involved.
5. Present evidence of having done some piece of conservation work such as fighting a forest fire, check-

ing erosion, planting trees, helping restock streams with fish, posting or distributing conservation notices, planting wild rice or other duck feed, feeding birds in winter, or stopping stream and river pollutions.

6. Know in general the conservation laws of his State.

Possibly time will demonstrate that some of these requirements are too difficult, especially for the city scout. Their merit lies in stimulating personal observation and in teaching forestry and conservation as crafts to be practiced in one's own locality rather than merely as "book learning."

A Boy Scout Observance of American Forest Week

[Extract from letter by F. A. Danton, Silver Fox Local Tribe, Lone Scouts, Cleveland, Ohio]

The tribe, after it had come to an understanding with the Forest Service on the observance of forest week, secured the cooperation of the Cleveland Public Library, which placed at our disposal an exhibit case and about 150 square feet of wall space in the entrance hall of the Hough Avenue branch. The Forest Service supplied us with bookmarks, two kinds of forest fire prevention posters, copies of the President's proclamation on American Forest Week, and several hundred copies of Government pamphlets for free distribution. For the big feature of the exhibit, the tribe ordered one of the traveling photographic exhibits entitled "Our Forests—What They Mean to Us" and a set of 28 commercial wood samples. A few days before the opening of American forest week, two scouts and the writer arranged the entire exhibit in the library.

The wood samples, which are labeled, were placed in the exhibit case. Our wall space was evenly distributed into four panels. Upon the first we posted, above the eye level, a placard which the tribe had printed bearing the words: "Observe American Forest Week, Lone Scouts of America, Greater Cleveland."

Beneath this was posted a copy of the President's proclamation and next to it a letter from Gov. Vic Donahey. Below these two documents was placed the poster "Fire the Outlaw." Upon the remaining wall space the photographic exhibit was tacked.

Two scouts were detailed to duty every evening during forest week for the purpose of distributing the literature and explaining to anyone interested the photographic exhibit.

It was estimated that over 1,000 persons viewed the exhibit during the week. This number includes only evenings.

Two minor exhibits were held in the Superior Avenue and East Seventy-ninth Street branch libraries. They consisted of pictures clipped from forest publications and mounted on cardboard and labeled, together with samples of wood, either gathered by the scouts or loaned by the Government, placed in an exhibit case.

Forestry Essays for Cash Prizes in Mississippi

High-school children of Mississippi have been trying hard during the past few weeks to state "the economic value of forestry in Mississippi." This subject was assigned them by the Mississippi Federation of Women's Clubs in a state-wide essay contest for which the State forestry commission donated prizes of \$25, \$15, and \$10. Essays were limited to 1,000 words and a preference was stated for a length of from 500 to 800 words. Contestants were invited to apply to the State forester's office for forestry information, but were urged to introduce into their essays local material and original opinion. The names of the winners will be announced at the annual meeting of the State Federation of Women's Clubs, April 20-23.



Of the 93 foresters graduated from the University of California, 80 per cent are now engaged in forestry or closely allied work. This group, classified by Prof. M. E. Krueger, includes a few men who after completing most of the forestry courses were graduated from departments other than forestry. The present occupations of the 75 men in forestry or closely allied lines, as listed by Professor Krueger, are as follows: Forestry, 35; logging engineering, 9; graduate study, 7; forest products, 5; teaching (forestry), 2; grazing, 4; lumber business, 8; lumber journals, 1; miscellaneous allied lines, 4.



Nine thinning demonstrations were given this winter to farmers of Berks County, Pa., by the county agricultural extension association. At each meeting 50 trees were marked with numbers and when C. R. Anderson, extension forester of the Pennsylvania State College, had discussed the principles of thinning, each farmer listed the trees which he thought should be removed. The farmers' lists were graded according to Mr. Anderson's selection of trees to be cut and the one who made the highest score received a hand ax as prize.



Forestry extension work in Nebraska was initiated in 1926 by a committee appointed by the governor and headed by Director Brokaw, of the agricultural extension service. Evergreens from the Bessey Nursery administered by the United States Forest Service at Halsey and hardwoods purchased from the Arlington nurseries were distributed to the number of 33,000. The result is from 3 to 12 plantings to a county in three-fourths of the counties in the State.

Forest Service Notes

Fertilizing Value of Red and Jack Pine Leaf Litter

A ton of needles falls to the ground each year in red and jack pine forests of the Lake States, according to a study made by the Lake States Forest Experiment Station. The amount varies somewhat for different kinds of stands and for different-aged stands, ranging from 1,847 pounds for virgin red and white pine to 2,375 pounds for young jack pine, but hovers close to a ton to the acre each year. These needles contain many substances essential for plant growth, and the study was made to find out just what quantities of the different materials are given back to the soil each year by the forest.

To collect the leaf fall, burlap strips were laid on the ground in five different localities in red pine and jack pine stands of different ages and densities. This was done in the spring of 1925. In the fall of that year the litter on the strips was collected and was analyzed by the division of soils of the University of Minnesota. The final collection was made in the spring of 1926. The following figures show the amount of litter that fell during the year on one acre at each plot.

Amount of leaf litter falling on 1 acre in one year

| Plot No. | Location | Kind of stand | Age | Amount of litter (oven-dry weight) |
|----------|-----------|---|---------|------------------------------------|
| | | | Years | Pounds |
| 1 | Clequet | 75 per cent jack pine, 25 per cent red pine; density, 75 per cent. | 50 | 2,104 |
| 2 | do. | 100 per cent red pine; density, 90 per cent. | 100 | 2,192 |
| 3 | do. | 100 per cent open-grown jack pine; density, 75 per cent. | 30 | 2,375 |
| 4 | Cass Lake | 75 per cent red pine, 25 per cent white pine; density, 95 per cent. | 200-250 | 1,847 |
| 5 | do. | 100 per cent jack pine; density, 90 per cent. | 55 | 2,373 |

The analysis of the needles collected in the fall of 1925 gave the following results for two of the plots:

Composition of leaf litter

| Substances | Per cent of dry weight | | Pounds per acre for one year | |
|------------|------------------------|--------|------------------------------|--------|
| | Plot 1 | Plot 2 | Plot 1 | Plot 2 |
| Ash | 2.51 | 2.01 | 52.8 | 44.2 |
| Nitrogen | .70 | .42 | 14.7 | 9.2 |
| Calcium | .74 | .35 | 15.5 | 7.7 |
| Phosphorus | .13 | .11 | 2.7 | 2.4 |
| Potassium | .12 | .15 | 2.5 | 3.3 |
| Sulphur | .24 | .23 | 5.1 | 5.0 |

One of the most valuable constituents of the leaf litter is the nitrogen, which becomes available to plants in the form of nitrates if the litter remains undisturbed. Forest fires, when they burn the litter, drive off the nitrogen in the form of gas. The nitrogen is thus lost to the soil and the growth of the forest falls off. The nitrogen contained in the litter collected in a year on 1 acre of red and jack pine forest could be replaced by about 70 pounds of sodium nitrate fertilizer, but this would cost in the neighborhood of \$3.

The fertilizing value destroyed by a forest fire is greater than the value of one year's fall of needles, because normally the forest floor bears the accumulated litter of three or four years. The actual loss in ground litter alone from a single fire in red and jack pine stands may easily be about \$10 an acre.

The National Arboretum

By GEORGE B. SUDWORTH, U. S. Forest Service

A bill has been passed by Congress and signed by the President authorizing the appropriation of \$300,000 for the purchase of land to be used in establishing a national arboretum within the District of Columbia. Such legislation has been sought for several years. The exact location of the arboretum has not yet been determined, but it appears likely that it will include an area of about 350 acres lying along the Anacostia River, known as the Mount Hamilton tract. As this bill originally passed the Senate it proposed to make the land available for park and recreation purposes. The House very properly eliminated these privileges. To leave them in the bill would have divided the administration of the tract between the Department of Agriculture and the War Department, to say nothing of attempting the impossibility of combining recreational use with the orderly development of an arboretum.

The establishment of an arboretum at the National Capital is one of the most important accomplishments for forestry in recent years. From an educational point of view the benefits likely to accrue from it are immeasurable. Coming at a time when public sentiment is being aroused and concentrated on a nation-wide effort to increase timber production through practical forestry, the building of a national arboretum will give a most important stimulus to this movement.

The probable site of this arboretum combines topographic and soil conditions ranging from moist lowland to high dry uplands, which is an ideal combination. It happens also that climatic conditions in the District of Columbia, the natural meeting ground of

many different northern and southern species, will permit the growing of an unusually large number of native and foreign trees and shrubs. On this border line between the North and the South there would seem to be a greater opportunity for successfully establishing a great collection of living trees than at almost any other point in the country. The city of Washington already has more different trees growing within its environs than any other city in the country. Its streets are adorned with more than 100,000 trees, and there are more than 600 different native and foreign trees growing in its public parks and other reservations.

In this connection should be mentioned the existence in Washington of the United States Botanic Garden, of many years' standing. Recently an act of Congress authorized an appropriation of \$600,000 for enlarging and relocating this botanic garden. The funds when appropriated will be used in acquiring land to the south of the garden's present location at the foot of the Capitol, and in the erection of new conservatories.

At the present time there are but few outdoor collections of trees in the United States. The Arnold Arboretum, established near Boston more than 50 years ago, is the most notable for its great variety of native and foreign trees. Other collections of trees are the Morton Arboretum at Lisle, Ill., the Marshall Arboretum at Northfield, Ohio, the Missouri Botanic Garden at St. Louis, the New York and Brooklyn Botanic Gardens, the Rochester Department of Parks at Rochester, N. Y., and the Letchworth Park Forest and Arboretum at Castile, N. Y.

Alaska Pulpwood Advertised in Two Largest Forest Service Sales

Two blocks of pulpwood on the Tongass National Forest now being advertised for competitive bids are the largest timber sale offers ever made by the Forest Service. Each of the sales is for 5,000,000,000 feet. One is near Juneau and the other near Ketchikan. A condition of each sale is the establishment in Alaska of a paper mill of at least 200 tons capacity. An investment of at least \$8,000,000 in water-power development, manufacturing plant, and logging equipment will be necessary in connection with each project. Five years are allowed for necessary engineering work and building the mill.

The lowest bids that will be considered are 60 cents per 100 cubic feet for spruce and 30 cents for hemlock pulpwood. Bid prices will remain in effect until April 1, 1942, and prices will be redetermined at that time and at intervals of five years thereafter on the basis of the actual current value of the timber.

Good water powers, which can be cheaply developed for grinding the wood into pulp, are available for each of these timber sales, and the Federal Power Commission will advertise the power while the timber is being advertised, so that both the timber and the power permit may be awarded to the bidder who offers the best terms.

The Alaska panhandle region has the timber and power resources for a perpetual industry producing at least a million tons of paper annually, and the Forest Service is planning for a permanent Alaska paper industry of this size.

Forestry Legislation, Second Session Sixty-ninth Congress

Some progress was made, but forestry did not fare as well in the second session of the Sixty-ninth Congress as it did in the first. The Woodruff-McNary bill passed the Senate in its original form but with an amendment by Senator Overman which would limit expenditures to those for the purchase of land on the headwaters of navigable streams, a restriction which would make section 6 of the Clarke-McNary Act a dead letter. When the bill reached the House it voted 340 to 15 to amend the measure by substituting the bill passed by the House April 7, 1926. The jam in the Senate, however, prevented action on the amendment.

Small additions were made to the Colville and Shoshone National Forests. The provisions of the general land exchange act were extended to areas adjacent to the Arapaho, Santa Fe, Harney, and Black Hills National Forests. A conflict in the provisions of the Weeks law was cured by amendment. The need for small nonagricultural home sites in Alaska was provided for by an amendment of the trade and manufacturing act. The boundaries between the Grand Canyon National Park and the Kaibab and Tusayan National Forests were adjusted. The embargo on the patenting of lands within the Northern Pacific Railroad grant was extended until 1928, with a request that the Attorney General advise Congress as to the legislative action that should be taken to settle the grant. The act authorizing the city of Boulder, Colo., to purchase 3,580 acres of national forest land within its watershed at a nominal price was the only adverse land legislation.

One interesting piece of legislation was the act presenting the New Mexico Agricultural College with approximately 50,000 acres of land adjacent to the Jornada Range Reserve, to be used in range livestock experiments.

Secretary Jardine Sets National Forest Grazing Fees

The Secretary of Agriculture has announced that there will be no change in fees for grazing on the national forests during 1927, but that the new schedule of fees recommended jointly by the Forest Service and Dan D. Casement, who at the Secretary's request investigated the methods of the Forest Service in appraising range values, will be put into effect on a graduated scale from 1928 to 1931, inclusive. One-fourth of the increases will become effective in each year of this period. The increases decided upon will be subject to such reductions as may be necessary to adjust the fees equitably among national forests or regions and among

the various grazing allotments within each national forest. The new fees will remain in effect for the duration of outstanding 10-year permits, or to and including the year 1934.

By 1931 the average increase over present fees in the rate for cattle on all the national forests under this decision will be 4 cents per head per month, making the average fee 14.4 cents; for sheep the average increase will be about 45 per cent and will make the average fee 4.5 cents per head per month.

Forestry Increases in the Agricultural Appropriation Bill

The agricultural appropriation act for the fiscal year 1928 includes the following increases for Forest Service activities:

| | |
|---|-----------|
| For fire prevention and presuppression..... | \$77, 285 |
| For additional personnel on timber sales..... | 40, 000 |
| For grazing administration..... | 6, 000 |
| For purchase of herd of long-horned cattle.... | 3, 000 |
| For new forest areas in the East..... | 3, 742 |
| Total for general expenses..... | 130, 027 |
| For establishing two forest experiment stations, in Pennsylvania and in the Ohio and Mississippi Valleys..... | 60, 000 |
| For naval stores investigations..... | 5, 000 |
| For forest products investigations..... | 9, 736 |
| For planting on the national forests..... | 18, 300 |
| For cooperation with the States in fire protection..... | 290, 000 |

The forest road and trail item has been placed at \$6,500,000, which is \$1,500,000 more than the regular appropriation for 1927. The improvement appropriation has been increased \$100,000 over the regular appropriation for 1927 for the construction of protection improvements on the four national forests in southern California. However, since a deficiency appropriation of \$100,000 for improvements was granted in 1927 and was merged with the regular appropriation for that year, the amount of money actually available in the improvement item for the year 1927 is identical with that provided in this item by the act for 1928.

Fire Line Construction by Machinery

Successful experiments have been made on the Flathead and Shasta National Forests in the use of graders, plows, and tractors in constructing fire lines. On the Shasta plateau a single trip with a 5-ton road grader, 12-foot blade, drawn by a 10-ton caterpillar tractor through heavy manzanita, chinquapin, and snowbrush 3 to 6 feet high made a clean line $2\frac{1}{2}$ to $3\frac{1}{2}$ feet wide. The rate was about 45 minutes to the mile on a 5 to 10 per cent grade. A back trip over the same

course gave a cleared line 4 to 5 feet wide. The two trip line reached mineral soil and was adequate for use in back-firing in most fires. A double round trip made an 8-foot motorway with reasonably smooth surface. Accumulations of brush had a tendency to hang up on the front edge of the blade, but by backing up a few feet and slightly changing the direction it was possible to free the blade.

On a hill of 36 per cent slope with numerous large loose rocks under the surface of the ground, the equipment running parallel to the slope and slightly downhill worked as well as on gentler slopes. There was no serious tendency to sideslip downhill.

A modified V-shaped drag 4 feet wide at the back, with sides 8 feet long, and weighing 4,600 pounds, was successfully drawn by a tractor through heavy brush, opening up a trail and pulling out most of the brush and roots. In most cases it did not eradicate the snowbrush, which has a tremendously powerful root system, but it was successful with the manzanita and chinquapin. A single passage opened a trail for a large crew to work from. A second trail was run parallel to the first with a crest 2 to 3 feet wide between. The grader was then run over the crest to shear it out and touch up spots missed by the drag. The result was a passable 8 to 9 foot motorway.

To brush out such a lane 8 feet wide by hand would cost not less than \$125 a mile. To make by hand a line comparable to the one made by tractor and grader would probably cost not less than \$400 a mile. With tractor, grader, and three-man crew the cost, at about \$5 an hour, would be \$20 a mile for a satisfactory motorway.

On the Flathead National Forest a trail has been made with plow and grader where the boulders were so numerous they almost hid the soil. In another instance 8 miles of trail were backloped with the plow on hills that averaged from 30 to 90 per cent side slope. The start was made at a proper height above the grade stakes and a furrow plowed to give footing to the horse. Then by throwing the plow handles toward the bank it was possible to plow the backslope to the desired angle down to the level of the grade stakes. A round or two of the grader completed the trail. When not needed for grading the horse is used in clearing the right of way, particularly in pulling small stumps at a great saving over the cost of blasting.

Slash Disposal in the Southwestern Pine Forests

[Some results of studies by Junior Forester Arthur C. McIntyre on the Colorado Plateau in 1925 and 1926]

Piling and burning slash is the most effective method of reducing the fire risk following logging. In building a pile a heap of fine material should be put at the base and the large limbs placed on this with the curve of the limbs up. The finished pile should be conical with

a few large limbs on the outside to bind it together. A large pile built this way can be burned with a foot of snow on the ground.

Large piles 9 to 10 feet in diameter and 6 feet high will take large limbs without cutting and so are more economical than small ones. Location and weather have more influence than size of piles on the damage to reproduction or reserved trees caused by burning the piles. Two small piles containing no more brush than one large pile can not be so advantageously placed, and if they are burned simultaneously the heat will probably be as great as that from a large pile. Large piles will burn during seasons when small ones will not; they can be burned green; they take less space; they cost less to build and burn; they give a better clean-up; and if burned when there is little or no wind they result in less damage.

Piling and burning is the most expensive method of slash disposal and when applied indiscriminately makes no provision for the best silvicultural conditions or for protection against erosion. Piles that have been erroneously located and left unburned do not rot readily, and remain a fire hazard for 30 or 40 years. In places where piles can not be burned it is best to use some other method of disposal or leave the brush as it falls.

On heavy soils that bake, loose cinder soils, and soils that erode readily, and on areas that are heavily grazed, lopping and scattering is desirable. Lopped and scattered slash need not be made to lie close to the ground, as snow, decay, and trampling by stock bring this about in a few years. Where this method of disposal is used the area should be broken into blocks of about 80 acres each by piling and burning on fire lines.

The method used most extensively on the Colorado Plateau is pulling the brush. It is the least expensive form of disposal. With this method also the area must be broken into small blocks by fire lines on which the slash is piled and burned.

Snags on all cut-over areas should be felled. In doing this care should be taken not to block logging roads, which should be kept open as fire lines and as a means of quick access in case of fire.



The calf crop on the Santa Rita Range Reserve of the Forest Service, near Tucson, Ariz., for the past 10 years has averaged 73 per cent, as compared with about 55 per cent on surrounding unregulated ranges. Marketing data on 5,000 head of "outside" cattle show that they brought from \$3 to \$8 less per head than stock of the same ages raised on the reserve.

General Forest News

Third Pan-Pacific Science Congress

By L. C. EVERARD, U. S. Forest Service

[From the report of W. C. Lowdermilk, delegate for the Society of American Foresters]

The third Pan-Pacific Science Congress, held in Japan from October 16 to November 19, 1926, was attended by 414 Japanese delegates and 151 delegates representing 15 other national groups on the Pacific. The attention of the congress was turned especially to oceanography, geophysics, human geography and ethnology, fisheries, botany, and agriculture and forestry, although about 400 papers were read covering a wide range of scientific subjects. The question of slope cultivation and erosion control came in for particular attention and the congress passed a resolution recommending that lands with steep gradients should not be cultivated, particularly where scarcity of moisture and other factors prevent quick return of vegetation; and that a study be made to determine safe gradients for cultivation, lands beyond such safe gradients to be kept under a "closed vegetative cover."

It was natural that the subject of erosion control should have a prominent place in the discussion, not

only for its importance generally but because the Japanese have for many years studied it intensively from both the engineering and forestry standpoints and have done some notable work in bringing back the vegetative cover on denuded slopes.

For instance, in the region about Mount Asama, an active volcano, the gradients are steep, valley walls at stream headwaters are not uncommonly 45°, the soil is soft and light volcanic debris, and the annual rainfall is 1,000 to 1,200 mm. Unregulated cutting of the forest (deciduous hardwoods) at the headwaters of the Kevezumi River to make charcoal led to washing and gulleying; the volcanic mud without forest cover to hold it was carried down to the valleys and plains and began to cover the rice fields; floods swept the villages, and damaged roads and bridges. About the year 1918 work was started to correct this. Cutting was stopped and made subject to approval by the forestry department. Dams were built, prostrate alder and grass were used for soil fixation, run-off channels paved with living sod nailed down with living cuttings of willow, plantations of conifers established, and by suting devices to the features of the ground the erosion has been arrested and the headwaters of the river have been reclothed with a protec-

tive cover. In Korea the forest experiment station at Seoul is making intensive investigations of less expensive erosion control methods. A method tried there is to terrace on 5-foot contours with a small horizontal shelf and build a low sod wall, pull down soil from the slope above and pack it in behind the sod wall, and plant seeds of Japanese alder (*Alnus firma* varieties) and *Pinus densiflora* in this soil shelf until vegetation establishes itself. Grass sod dams are also built in the small run-off channels and shrubs and trees established in the soil accumulation behind these dams. Of the shrubs used *Lespedeza bicolor* may be mentioned; the seed of this shrub were mixed with earth from pea fields to inoculate the roots with nitrifying bacteria before planting behind the dams. Other planting materials used for temporary cover are *Pinus thunbergii*, *Robinia pseudoacacia* L., *Alnus japonica* S. et L., *Salix japonica* Thunb., and other *Salicaceae*.

"The experience of Japan is that a barren or eroding catchment basin of the short rivers yields more sudden and disastrous stages of high water than similar watersheds covered with forest vegetation. The comparative influence of a forested and excessively eroding watershed is not a debatable question in Japan. The Japanese engineers and foresters, unlike those of some western countries, are in agreement on this point. It is not a question of the influence of forests on stream flow, it is rather how shall barren eroding lands be restored to a cover of forest vegetation. The disastrous experiences in the narrow valleys from angry flood waters issuing from eroding catchment areas have been costly instructors. The maintenance of watersheds in a mantle of forest vegetation has proved to be the most economical policy in the control of flood waters.

"Dikes are built in the alluvial plains to protect adjoining fields from inundation and submergence with sands. They are considered essential, even as the mantle of vegetation is considered necessary. Japanese engineers and foresters have progressed beyond a controversial stage to one of cooperation in control of the natural resources of vegetation, soil, and water."

The Japanese Government as host of the congress overwhelmed the delegates with unprecedented hospitality and consideration. In preparation for the excursions to be taken guidebooks had been written especially for the delegates by specialists in geology, botany, zoology, and history. These books, containing the information which the visiting scientists wanted most, were presented to the delegates. Also railway passes for Japan and Korea, hotel accommodations, meal tickets, and even passes on the Tokyo electric lines were a part of the hospitality, to say nothing of the entertainment of a more formal nature.

The Japanese put the cap on their hospitality by making English the official language of the congress, out of consideration for the fact that it was the language of a great many of the visiting delegates from various national groups.

In the resolutions of the congress attention was called to the fact that native fauna and flora of the oceanic Pacific islands are rapidly vanishing, and it was urged that systematic collections of both plant and animal species be made before it is too late. Economic development of the islands and introduction of domestic animals and plants were given as the causes of the dying out of endemic fauna and flora. Among the subjects given major attention at the congress were the preservation of original flora and fauna of scientific interest—particularly those of the Juan Fernandez Islands, which are of peculiar scientific interest—and of remarkable geological formations; collection and publication of surface temperature readings from ships in the Pacific; cooperative study of volcanology; geodetic investigations with the aid of submarines; cooperation in daily charting of the meteorology of the world; studies of the mineral resources of the Pacific region; research into the configuration of the ocean floor; study of physical and chemical oceanography and marine biology; surveys of known and probable enemies of crops and promotion of protection against them; and slope cultivation and erosion control.

The congress formed a permanent organization known as the Pacific Science Association and accepted the invitation of the Government of the Dependencies of the Netherlands to hold the fourth congress in Java in 1929.

American Forestry Association Meeting

The American Forestry Association at its annual meeting held this year at New Haven, Conn., on January 28 and 29, voted to support adequate fiscal programs for Clarke-McNary cooperation in fire protection, and for the purchase of lands for national forests east of the Great Plains. Hon. George D. Pratt, president of the association, in speaking of the Clarke-McNary law, laid stress upon the point that the principle of cooperative effort "must meet the test of accomplishment." "The experience of the Federal Government itself," he said, "has shown that inadequate appropriations for fire prevention too often result in far more expensive outlays to extinguish fires which might have been prevented. * * * My own association believes that Congress should make available at least one million and a half dollars annually, if it is to be in a position to meet its own assumed obligations in cooperative fire protection and to exercise leadership in a national forest policy which it has initiated as the will of the people."

In speaking of the purchase of lands for national forests he said, "The danger here lies in the public and political demand that the small amount of money made available for the work annually be spread over the much greater area coming under the enlarged authority of the Clarke-McNary Act, thereby dissipating the funds available for completing acquisition projects already

started. * * * The permanence and success of this act are all important to forestry in the United States. Failure of any one of the three agencies, State, private, or Federal, and most particularly the last, to do its part means a setback that will undo much of our forest progress during the past decade."

The association also voted to support forest research on a scale commensurate with the importance of our national timber problems.

Robert B. Goodman, former chairman of the committee on economics of the National Lumber Manufacturers' Association, in an address on "Where will the lumberman get his future supplies?" called attention to the change in the relationships between the forestry profession and the lumberman. "The timber owner," said Mr. Goodman, "is looking to the forester, whom he formerly mistrusted as an economic enemy, as his economic adviser."

E. A. Sherman, associate forester of the United States Forest Service, in speaking on "The sunny side of conservation," said: "The evidence of the economic disaster confronting our Nation and the magnitude of the task involved in the conservation and restoration of our forests has, I fear, made forestry somewhat of a bugbear. I want to urge that henceforth we preach the blessing of new and better forests, industries restored upon a permanent basis, the landscape beautiful arising from the ashes of the landscape desolated, a permanent population with money in the bank and confidence in the future. * * * It seems to me that henceforth there are three aspects to the forest problem that may well receive your special emphasis. First, to bring the people to realize that expenditures for forest protection and production increase our national wealth and tend to reduce the national burden upon industry; that such expenditures are an exceedingly safe and profitable investment, and that every dollar thus taken from the National Treasury will be repaid with a cash profit in addition to collateral advantages even more important to industry and to social progress. Second, it is an investment permanently enriching the immediate region where expended. Third, the beauty as well as the utility of our forests has a real value measurable in dollars and cents in that it makes the country more attractive for the habitation of man and adds materially to the sale value of every acre of land within the radius of its influence."

Will C. Barnes, of the United States Forest Service, pointed out in his address on "The romance of the grass lands" that since the first conservation congress in 1908 the preservation of our national grazing lands of the public domain had been constantly discussed but that nothing had ever been done about actually putting these lands under management that would maintain their productivity and carrying capacity. "To-day," said Mr. Barnes, "this country has nearly 180,000,000 acres of strictly grass lands, lands which under no known system of cultivation can ever be used for any other purpose than the grazing of live-

stock. An area larger than Texas and which at a value of even \$2 an acre means over \$300,000,000 worth of public property is lying idle and deteriorating in usefulness—a liability rather than an asset."

In describing the way in which range management was developed on the national forest ranges, Mr. Barnes called attention to the fact that "no nation had ever before undertaken such a task as regulating the use of over 150,000,000 acres of forest lands by about 14,000,000 head of cattle and sheep of all ages." There were no precedents; the work was pioneer work. It was done with an uncommon amount of sympathy for the stockmen and understanding of their problems; indeed, it was directed in large measure by stockmen who had left their flocks and herds to enter the Government service. Mr. Barnes gave it as his opinion that "the majority of livestock permittees using the grazing lands on our national forests are willing to admit that their industry must be secondary to the primary purposes for which the forests were created—timber production and watershed protection."

Vice President Rice, of the New York, New Haven & Hartford Railroad, in an address on "The railroad man's interest in forest conservation," said that his company uses 82,000,000 board feet in ties each year, of which all but 12,000,000 feet is grown in southern New England and eastern New York.

Other addresses made at the meeting included:

"Public aspects of State forestry," by F. W. Lucning of the Milwaukee Journal.

"What forestry means to the South," by Miss Martha Berry of the Berry Schools of Georgia.

"Chemical possibilities in wood utilization," by Carlile P. Winslow, director of the Forest Products Laboratory.

"Making wood last longer," by Grant B. Shipley, president of the Century Wood Preserving Co.

"Conservation of wild life and waste land," by Hon. F. C. Walcott, chairman of the Connecticut Commission on Forests and Wild Life.

"A rational wild plant conservation program," by Dr. Albert F. Hill of Yale University.

"Importance and methods of preserving wilderness conditions," by Dr. Charles C. Adams, director of the New York State Museum.

"The weather man as a forest fire fighter," by Dr. Charles F. Marvin, chief of the United States Weather Bureau.

"Some neglected values in New England," by A. M. Turner of the Connecticut State Park and Forest Commission.

Addresses on forestry in New England in relation to pulp and paper, industrial development, and stream pollution were made by Forrest H. Colby, former forest commissioner of Maine; John S. Lawrence, president of the New England Conference; and William R. Copeland, of the Connecticut State Water Commission.

Addresses were also made by President Emeritus Arthur T. Hadley, of Yale University; Henry S. Graves, dean of the Yale Forest School and president of the Connecticut Forestry Association; and Lieutenant Governor Brainard.

The attendance was more than 300. Inspection trips to the collections in the Yale School of Forestry and Peabody Museum of Natural History, and to the New Haven Progress Exhibit, and a field excursion to the forestry operations of the New Haven Water Co., were a part of the program.

The meeting was a joint meeting of the American and Connecticut Forestry Associations, and in conjunction with the general sessions were held special joint meetings with the Connecticut Botanical Society and the forest firewardens of Connecticut, and special meetings of the New England section of the Society of American Foresters and the Forestry Association Secretaries' Club.

Canada Takes the Lead in Newsprint Production

World leadership in newsprint manufacture in 1926 went to Canada, according to the News Print Service Bureau. In that year the United States, which in 1925 had a slight lead over Canada, increased its output by 10 per cent; but the Dominion shot ahead with an increase of 24 per cent. The figures given by the bureau are: Canada, 1,882,000 tons; the United States, 1,687,000 tons. Newfoundland, with a gain of 93 per cent over its record of the preceding year, produced 186,000 tons in 1926.

Of the record-breaking Canadian production 88 per cent was imported into the United States. With this huge addition to the domestic output, practically all of which was kept within the States, and other imports totaling 193,140 tons, the United States accounted for 56 per cent of the world consumption of newsprint in 1926. Overseas importations to the United States showed a decline, as they have done each year since 1923.

The per capita consumption in the United States, according to estimates of the News Print Service Bureau, in 1926 reached the remarkable figure of 58 pounds. The increase over the 52 pounds per capita consumed in 1925 is said by the bureau to be due to growth in both the size and the circulation of newspapers. In 1926 the newspapers of the United States carried 5 per cent more advertising than ever before, added still more special features and special sections, and increased their Sunday circulation by 5 per cent and their daily circulation by 7 per cent.



Black walnut is bringing \$40 to \$100 per thousand board feet on the stump in the good walnut section of Ohio, Extension Forester P. W. Dean reports. A single 30-inch tree which scaled well over 1,000 feet was sold by a farmer in Logan County for \$150.

McSweeney Introduces Comprehensive Bill for Forest Research

The most comprehensive single bill dealing with forest research that has ever been presented to the Congress of the United States was introduced on March 3 by Representative John McSweeney, of Ohio, at the request of the National Forestry Program Committee. This bill (H. R. 17406) carries out, with minor modifications, the recommendations made by a special committee of the Washington section of the Society of American Foresters in a report entitled "A National Program of Forest Research." It is intended to codify and round out Federal legislation on forest research and to authorize appropriations large enough to permit satisfactory development in this field during the next decade.

The McSweeney bill covers the forest research of the Forest Service, the Bureau of Plant Industry, the Bureau of Entomology, and Biological Survey, and the Weather Bureau, and would provide for appropriations for this work totaling \$3,465,000. It would authorize the Secretary of Agriculture to carry on investigations to determine the best methods of reforestation and of growing, managing, and utilizing timber, forage, and other forest products, of protecting forests from all harmful agencies, of managing wild life, and of maintaining favorable conditions of water flow and preventing erosion; and to determine the economic considerations underlying the establishment of sound forest policies. It would provide for studies of forest-tree diseases, of fungi causing decay in wood and other forest products, and of injurious and beneficial forest insects; studies of the relationship of weather conditions to forest fires; and investigations into the life histories of forest animals and birds. Under its terms the Secretary of Agriculture would be authorized to develop improved methods of range management consistent with the growing of timber and the protection of watersheds. Provision would be made for investigations at the Forest Products Laboratory and elsewhere in the utilization and preservation of wood and other forest products. Finally, it would authorize a comprehensive survey of present and prospective requirements of lumber and other forest products, existing timber supplies, and the present and potential productivity of forest lands; also investigations of timber-growing costs and returns and of the possibility of profitable forestry in the various forest regions, with the purpose of bringing about the profitable use of land and the effective distribution of forest crops.

An important specific provision of the bill would direct the maintenance of the 11 regional forest experiment stations already established or authorized and the establishment of 1 additional station in the continental United States and 1 each in Alaska and the West Indies. This would mean one station for each of our major forest regions.

The Increasing Average Haul of Lumber

By ROBERT V. REYNOLDS, U. S. Forest Service

The average rail haul of lumber from place of manufacture to place of use has practically doubled in the United States in 10 years. Estimates by the Forest Service for 1923 and 1924 place it at 725 miles and 700 miles, respectively, whereas a 1914 estimate placed it at 360 miles.

The apparent decrease of 25 miles in 1924 may be without significance, or it may be an indication that the increasing cargo shipments of North Pacific softwoods to the Atlantic coast have cut down the average rail haul to that extent. The estimates of the average rail hauls of the lumber-producing regions in 1923 are as follows:

Lumber transportation: Estimated average length of rail hauls, 1923

| Region | Inbound (miles) | Out- bound (miles) |
|-----------------------------|--------------------|--------------------------|
| Northeastern..... | 840 | 180 |
| Lake..... | 910 | 415 |
| Central..... | 890 | 405 |
| North Carolina pine..... | 300 | 360 |
| Southern pine..... | 250 | 685 |
| Pacific (North)..... | 255 | 1,275 |
| Pacific (South)..... | 560 | 755 |
| Rocky Mountain (North)..... | 420 | 850 |
| Rocky Mountain (South)..... | 820 | 610 |
| Prairie..... | 1,515 | 300 |
| United States average..... | 725 | 725 |

Relative length of haul is a factor of great importance in the rivalry between lumber-producing regions, such as the present competition between Douglas fir and southern pine for the markets of the Northeast.

With an average rail haul of 1,275 miles North Pacific softwoods appear to be hopelessly handicapped as against southern lumber with an average haul of 685 miles. The Northwest is 85 per cent farther from its market than the South. The average rail freight charges, however, do not increase proportionately with the length of haul, being in this instance only about 60 per cent greater for Douglas fir than for southern pine. The average charges per thousand feet are approximately \$9.35 for southern pine and \$14.85 for Douglas fir.

The difference of \$5.50 per thousand in favor of the South has not proved an insuperable obstacle to the West, which with the aid of lower production costs and water transportation continues to invade the northeastern market successfully.

Here it should be observed that averages do not tell the whole story, as rail charges to New York are \$12.38 for softwoods from the Gulf States and \$22.23 for softwoods from Portland and Seattle. The South, however, has an advantage in that it can reach all parts of the northeastern territory by rail without

extending its present average haul or increasing the charge per thousand. On the other hand, most advances made hereafter by the West into new market territory in the East will result in extreme hauls at extreme rates and will tend to cause the western averages, both of hauling distance and charge per thousand feet, to rise rapidly. There are many important internal sections of the country which under present conditions can be served only by rail traffic and which will become increasingly dependent upon softwoods from Washington, Oregon, and British Columbia as eastern and southern supplies decline.

Chinese Elms on the Northern Great Plains

By F. E. COBB, State Forester of North Dakota

Mr. Woodbridge Metcalf's account, reported in the November number of the Forest Worker, of the successful growing of the Chinese elm in California leads me to write of the growth of this importation on the northern Great Plains.

In the spring planting seasons of 1918 and 1919 more than 3,000 2-year seedlings of this species were received at the Northern Great Plains Field Station at Mandan, N. Dak., where I was then acting in charge of the tree work. These were sent out to 18 selected farmers for trial.

In 1925 while doing some work at Cornell University I sent these farmers a questionnaire in regard to these Chinese elms, and received 16 replies reporting very satisfactory results. After seven growing summers, more than half during drought years, the surviving stand averaged 92 per cent. Only 3 of the 16 farmers reported any winter or drought injury. Three reported injury by insects including the spiny elm caterpillar, blister beetle, and grasshopper; and one wrote that his planting had been killed outright by rabbits. Others reported injury by hail, sleet, snow, wind, and cattle. The height growth reported compares very favorably with that of the California plantings described by Mr. Metcalf, averaging 14 feet. The maximum growth was 19 feet and the minimum growths, which occurred in a section of Montana where drought was particularly severe, were 5 and 8 feet.

Height growths of 24 and 25 feet have been recorded for this species in both Montana and North Dakota. In six experiments on dry-land field stations of the Bureau of Plant Industry in the Great Plains region (Texas to Montana) an average growth of 14 feet and a maximum growth of about 24 feet were reported. On three irrigated plantations in Montana, South Dakota, and Nebraska the average growth was 21 feet and the maximum about 24 feet.

In the spring of 1924 an abundance of seed of the Chinese elm was obtained in certain localities of North Dakota. One farmer, having picked a larger quantity of this seed than he cared to plant, thoroughly dried the remainder, placed it in a cereal carton with a

closed cap, and set it away. In January, 1925, he tested some and found it viable, and in March he sent about six ounces to me at Ithaca. In April, 1925—one year after it was picked—this seed was used to plant a 4 by 12 seed bed in the Cornell forest nursery. It came up well, giving a very satisfactory, even stand. The seedlings grew from 3 to 6 inches the first year. In the spring of 1926 1,600 of them were sent to the State forest nursery at Bottineau, N. Dak., and planted there. The stand when dug in the fall of 1926 showed an average survival of 92 per cent and had attained an average growth of 2 feet.

The Chinese elm has two serious drawbacks. One is that of susceptibility to mechanical injury in high winds, especially when pruned. The other is its very early flowering habit. It often flowers in February in Texas and in April in North Dakota. In either location such early blossoms are almost certain to be killed by frost. An important point in favor of the tree is that it is a strong surface feeder and so is able to make use of small amounts of moisture falling as light showers. Also, it will sprout from injured or cut roots, although only slight success has been obtained in rooting either green or dry cuttings. It has proved itself a species of outstanding value for the semiarid regions of the Great Plains. We are planning to raise a quantity of trees of this species at the State forest nursery of North Dakota for general distribution in the State.

Press and Fire-Protection Men Get Together at Tacoma

A fire-prevention meeting held on February 16 by the Chamber of Commerce of Tacoma, Wash., brought the press and the fire protective associations of the Northwest face to face with each other's troubles and points of view. The 80 or 90 men present included the presidents of three transcontinental railroads, the State foresters of Washington and Oregon, the State land commissioner of Idaho, and representatives of the chambers of commerce of Tacoma, Seattle, Portland, and Spokane and of the Portland Oregonian and Journal, the Seattle Times, and the Tacoma papers, the American Lumberman, the Timberman, the West Coast Lumberman, the Four L Lumber News, the Western Forestry and Conservation Association, local forest fire protective associations, and the United States Forest Service. A prearranged series of talks in which public education in forest fire prevention was a leading subject was followed with reports by a committee on policy and a committee on educational publicity.

The definite piece of work which the conference adopted as its own is an effort to have every chamber of commerce in the Northwest appoint a forest fire prevention committee and set it working along lines suggested by State forest protective associations or State foresters.

The conference will meet again in 1928 and, without forming an organization, will be continued as long as it seems to be needed.

Ten Commandments of the Trail

HENRY WELLINGTON WACK

[By permission of the author]

First.—Use the By-Ways—not the Highways.

Second.—Don't go Walking to beg a Ride. The auto-riding Hiker is a Fraud.

Third.—Everything belongs to Somebody. Then respect all Private and Public Property. Be not the Author of its displacement, disfigurement, or disappearance.

Fourth.—Keep off Prohibited Ground. Neither fish nor hunt on Posted Land. Trespassers create bad will toward all Nature Lovers, Campers, and Sportsmen.

Fifth.—Leave Gates, Fences, Signs, Stakes, growing grain, and crops as you found them. Walk around, never across, all planted fields.

Sixth.—Pluck no Wild Flowers—they belong to all. Leave them for all to enjoy. Pick no cultivated fruit. Resist the boyhood call of the Melon Patch.

Seventh.—Clear away twigs, leaves, and pine needles down to moist earth, before laying a Camp Fire 1 foot square. Keep cook fires low, and less than one-fifth the size of the clearing. Large fires prevent cooking, but destroy forests. Only small fires are safe, quick, and comfortable to cook with. Put camp fires out with water, not with a kick. See that the peat or humus around the fire is not burning underground to destroy the woodland after you have left. A single spark may fly a hundred feet and burn a million trees. Arson is no greater crime than stupidity or neglect on the Trail.

Eighth.—Leave camp sites clean; burn all garbage; replace cut firewood and supplies found in camps. You are the Guest of an absent Host—not the vandal of a present opportunity. Leave a note of thanks in a wilderness shelter you have used. Put in order before you depart.

Ninth.—Silence, or speech in whispers, is the sign of trail experience and good woodsmanship. Only fools and asses bray in a Forest.

Tenth.—When you leave a beautiful Woodland or descend from a Mountain, stop, turn around, and gaze reverently awhile. Then thank God for the boon our Forests are to all mankind. Treat Life's Trail responsibly and keep it clean. To the seeing eye and the generous soul, Nature's beauty—her mysteries and charm—forever call us to her Trails.



Frederick, Md., has recently purchased about 3,000 acres of timberland on its watershed. The city already owned a protection forest of 2,000 acres.

Foreign Notes

Forest Farms in England

By W. N. SPARHAWK, U. S. Forest Service

Beginning in 1919, the British Government had up to the end of 1925 acquired for reforestation purposes approximately 30,000 acres of sandy land in three units in Suffolk and Norfolk. These areas include considerable arable land; and a large number of farmhouses and cottages, including at least one entire village, were acquired along with the lands. The farms had long been deteriorating, many of them were abandoned, and the whole district was in a bad way. It was soon found that a good supply of local labor was essential to do the planting and other forest work, and in 1925 the scheme of forest workers' holdings was put into effect.

The more fertile lands have been classified and divided into units of approximately 10 acres, and a house with necessary outbuildings is being provided for each unit, either by repairing existing structures or by building. The occupants, who are carefully selected from a waiting list, pay 5 to 10 shillings (\$1.25-\$2.50) an acre annual rental for the land, and 6 per cent of the cost for buildings. The forest department guarantees them 150 days' work a year at current local wages, and also hires their teams and plows for planting work, for making fire lines, and for hauling. They are encouraged to raise vegetables, small fruits, poultry, and pigs, for which there is a good market fairly near. According to the plan there will ultimately be about five of these small farms for each 1,000 acres of forest plantations, i. e., a maximum of 5 to 8 per cent of the total area will be used for agriculture. The farms are to be well distributed over the forests in groups of three or more, so as to avoid loss of time in going to and from work and to afford a maximum degree of protection.

So far the work has consisted chiefly in establishing 86 acres of nurseries and in preparing the ground, fencing, and eradicating rabbits. About 12,000 acres were planted during the first seven years, and planting is now proceeding at a rate of more than 3,000 acres a year. It is expected that thinnings will be begun in from 10 to 12 years and will furnish firewood, fencing, and other material, and that a few years later the cutting of mine props will furnish an increasing demand for labor. As timber becomes available, various wood-using industries will be established.

On the 20,000-acre unit known as Thetford Chase 56 settlers have already been established and some 350 persons were given part-time employment during the fall and winter of 1925-26. The population of the

State-owned village of Santon Downham, which had been almost deserted, has increased from 50 to over 200.

Australia Establishes a Forestry School

A forestry school for the Commonwealth of Australia was first suggested at the Interstate Forestry Conference in 1911. Although the proposal was greatly favored, nothing came of it until 1925, when C. E. Lane-Poole was appointed forestry adviser to the Commonwealth Government and a central school was temporarily established at Adelaide University under the professorship of N. W. Jolly. Adequate funds have now been provided and a central forest school is assured. Buildings are now being erected at Canberra and will be ready for occupancy some time during the year. The location of Canberra is fortunate, since the school will have immediately at hand probably one of the best conifer arboreta in Australia and will be within 3 miles of forest plantations now amounting to 1,000 acres.

Forestry in Czechoslovakia

One-third of all the land in the Republic of Czechoslovakia is forest land, 46,628 square kilometers out of a total of 140,394. More than 220,000 people are engaged in forest activities including activities connected with game and fish. The most important timber is spruce, of which there are 1,196,382 hectares in pure stands. There are 486,720 hectares of pure pine stands, more than 600,000 hectares of mixed coniferous growth, chiefly fir and larch, and 1,274,000 hectares of hardwoods, chiefly beech and oak.

National forests amount to more than 700,000 hectares and communal forests to more than 430,000 hectares.

More than 74 per cent of the total forest land of the republic is under administration; and of the large forests in Bohemia, Moravia, and Silesia, as distinguished from what the Czechoslovakian foresters call "small parcels," more than 96 per cent of the area is under administration. In Slovakia and the Subcarpathian Province more primitive conditions prevail.

The total wood production of Czechoslovakian forests is about 15,000,000 cubic meters annually. Other products that appear in the forest statistics of the Republic are tanbark from oak and spruce amounting to 456,000 hundredweights and leaf litter amounting to 448,000 hundredweights. Something over 10,000 kilograms of naval stores are produced.

The Republic maintains 62 forest nurseries, for which it appropriates about 2,000,000 crowns a year.

Czechoslovakia has very ambitious plans for the development of forest research. A separate "institute" has been established for each branch of forestry, including silviculture, mensuration, economics, products, entomology and pathology, and forest soils. The entire organization is still in a formative stage, and comparatively little field work has yet been possible. Perhaps the greatest progress has been made in studying forest soils, with particular reference to the relation of their chemical properties to tree reproduction and growth.

Soutrage

By W. N. SPARHAWK, U. S. Forest Service

"Soutrage" is a short French word meaning "the removal of leaf litter from the forest." M. Delevoys, chief of the research division of the Belgian Forest Service, has recently reported the results of experiments that demonstrate clearly the evil results of this practice.

Five sample plots were established in a Scotch pine forest and studied for 21 years. One was a check plot; on one the litter was removed every year; and on a third the litter was removed annually, but mineral fertilizer was added every third year. The fourth plot was stripped of litter every third year, and the material taken from the three plots was scattered over plot 5. The stand was 50 years old at the time of the last measurement, in 1919.

Measurements of the volume showed that annual removal of the litter resulted in a loss of 17 per cent in the current annual increment, equivalent to a deficit of $1\frac{1}{2}$ cubic meters per hectare per annum (21 cubic feet per acre). With removal of the litter once in three years, the loss was slightly less. Although the addition of fertilizer reduced the loss in growth to some extent, the saving was not sufficient to make it worth while. The extra accumulation of leaf litter on the fifth plot led to an increase in growth of 16 per cent over the check plot (20 cubic feet per acre per annum).

In a 28-year-old stand of beech, with a slight mixture of oak, birch, and larch, nine plots were established in 1897. On one the litter was removed annually and on another every three years. On the third plot both litter and leaf mold were removed every three years, and the fourth was treated in the same way except that fertilizer was added. On the fifth and sixth plots the soil was dug up with mattocks every three years, fertilizer being added on the sixth. On the seventh the rows between the trees were cleared out every three years and the loose earth scattered over the ground. The litter from plots 1 to 4 was scattered over plot 8. No. 9 was a check plot.

Volume measurements in 1910 and 1919 showed a diminution in current annual increment of 21.2 per cent, or approximately 2 cubic meters per hectare (28 cubic feet per acre), on the plot from which the litter was

taken annually for 22 years. Where it was removed once in three years, the loss was 16.3 per cent (21 cubic feet per acre per annum). Removal of the leaf mold with the litter reduced the growth by 34.6 per cent, or approximately 49 cubic feet per acre per annum, and where mineral fertilizer was substituted the loss was about one-half as large. The various methods of cultivation, as well as the addition of litter, increased the growth by about 6 per cent, or approximately 10 cubic feet per acre per annum. (From Bulletin of Société Centrale Forestière de Belgique, October, 1926.)

University of Toronto Gives Extension Course in Forestry

The University of Toronto through its department of extension is offering a correspondence course in elementary forestry. The 30 lessons of the course deal with tree identification and the relationships of trees and forests to environmental factors; forest conditions with reference to present and future supplies; methods of obtaining natural regeneration; methods of planting; wood utilization; and logging methods. The course does not lead to any formal certificate or degree, and there are no academic entrance requirements.



The woodlands section of the Canadian Pulp and Paper Association has decided to engage a forest engineer to carry on investigative work in connection with logging operations and woods management. The man to be employed will be known as the technical secretary of the section and will be responsible to the secretary manager of the association. Through the activities of its woodlands section the association aims to lessen the cost of delivery of pulpwood from stump to mill, by developing improved methods of logging, and to bring about the adoption of forestry principles in the management and administration of timber holdings and timber operations.



Imports of western red cedar into New Zealand totaled 6,500,000 feet in 1925 as compared with only 1,350,000 feet in 1924. They continued to grow in 1926, amounting in the first three months of the year to 1,932,000 superficial feet as against 908,000 in the corresponding period of 1925. Western red cedar is valued in New Zealand because of its lasting properties. Although it can not stand so long as the native matai, it is easier to nail.



Lumber exports from the Port of Montreal to the United Kingdom decreased in 1926, the year of the British coal strike, by 11,628,000 board feet. The decrease was from 57,572,000 board feet in 1925 to 45,944,000 in 1926.

Personals

Paul G. Redington has been appointed chief of the Bureau of Biological Survey, to succeed Dr. E. W. Nelson. In this change the United States Forest Service loses a man not only distinguished in his profession but exceptionally popular both in the service and with the public. Mr. Redington entered the service in 1904, immediately after graduation from the Yale Forest School. After serving on many national forests of the West, in 1916 he became district forester of the Southwestern National Forest District, and from 1919 to 1926 he was district forester of the California district. In the spring of the latter year he took charge of the public relations work of the Washington office of the Forest Service.

R. Y. Stuart, until recently secretary of the Pennsylvania Department of Forests and Waters, has returned to the United States Forest Service, succeeding to Mr. Redington's post as chief of public relations. Mr. Stuart was graduated from the Yale Forest School in 1906 and entered the Forest Service in that year. After six years' service on the western national forests he joined the Washington staff as inspector of national forest timber sales, and later he took charge of the entire western division of this work. In 1917 he was furloughed for military service in France with the Tenth Engineers. He became deputy commissioner of forestry in Pennsylvania in 1920, and had full charge of forestry work in the State, as secretary of the department of forests and waters, throughout the administration of Gifford Pinchot as governor.

Charles E. Dorworth has received appointment to the cabinet of Governor Fisher, of Pennsylvania, as secretary of the department of forests and waters. Mr. Dorworth has since 1909 been editor of the *Bellefonte* (Pa.) Republican.

Representative Gordon Lee, of Georgia, has resigned from the National Forest Reservation Commission, and has been replaced by Representative S. D. McReynolds, of Tennessee.

Grover M. Conzet has been reappointed for two years as commissioner of forestry and fire prevention of Minnesota.

William G. Howard has been appointed superintendent of State forests of New York, succeeding the late Clifford R. Pettis. Mr. Howard was formerly Mr. Pettis's assistant.

Clayton W. Watkins has been appointed forestry extension specialist in Nebraska. Mr. Watkins is a graduate of the Colorado Agricultural College and was formerly a ranger on the San Isabel National Forest, Colo.

Tom Gill has become forester for the Charles Lathrop Pack Forestry Trust. His work for the trust will consist largely in the preparation of books and articles on various phases of forestry. Half of his time during the next three years will be devoted to a tropical forest survey under the direction of the Tropical Plant Research Foundation, to which the Pack forestry trust has donated funds for this purpose. The object of this work will be to identify the more important tropical species and to determine their amount and availability and their potential influence on forest supplies and forestry practices in the United States and other countries. Field work will begin in November of this year, probably in the countries of the Caribbean region. Mr. Gill was for 12 years a member of the United States Forest Service, and for the past year has been associate editor of *American Forests* and *Forest Life*. He visited the Tropics in 1923 as a member of the first aerial timber-estimating expedition to Mexico, and in 1925 was sent by the Tropical Plant Research Foundation to make a survey of forest conditions in eastern Cuba.

C. F. Evans, of the Intermountain National Forest District, has been appointed to the new Clarke-McNary inspectorship with headquarters at New Orleans. He will inspect the cooperative work under the provisions of the Clarke-McNary law in Florida, Alabama, Mississippi, Louisiana, Texas, and Oklahoma.

Prof. R. S. Hosmer, of Cornell University, and Dr. J. C. Kendall, of the New Hampshire Agricultural Experiment Station, have been reappointed for a period of four years as members of the Northeastern Forest Research Council. Members newly appointed are S. H. Thomson, president of the Federal Land Bank of Springfield, Mass., and Blaine S. Viles, State forest commissioner of Maine.

Charles J. Kraebel has returned to the United States Forest Service as silviculturist, California Forest Experiment Station. Mr. Kraebel, who is a forestry graduate of the University of Michigan, entered the service in 1916 as ranger. After serving as forest assistant and forest examiner he went to Hawaii in 1920 as assistant State forester. In 1924 he joined the National Park Service, from which he has now resigned as superintendent of the Glacier National Park.

Roscoe Weaver has been given charge of the Devil's Canyon nursery of the California Forest Experiment Station, opened on January 1. Mr. Weaver has previously been employed by the United States Forest Service, the Philippine Forestry Bureau, and the California State Board of Forestry.

Kenneth Pearce, of the 1921 class of the College of Forestry of the University of Washington, has been appointed chief forest engineer for the Madras Presidency, Madras, India. Mr. Pearce will be responsible for the operation of five sawmills and connected operations, and for all domestic export log and lumber sales from government forests and mills. His head assistant will be Jack Wernham, also a graduate of the Washington school.

K. E. Kimball, district forester of the southeastern district of North Carolina, has been appointed to assist the State forester of Mississippi.

Arthur C. McIntyre is leaving the United States Forest Service, after two and one-half years' service as junior forester on the Coconino National Forest, to undertake work in forest planting research at Pennsylvania State College.

Everett E. Stanford has been promoted to the position of chief assistant forester of Los Angeles County, Calif. His work includes the operation of a nursery, reforestation, roadside planting, insect control, mistletoe eradication, and research.

Aubrey H. MacAndrews has succeeded the late Prof. Edwin A. Hartley in the department of forest entomology of the New York State College of Forestry. Mr. MacAndrews was graduated from the college in 1925, and spent the past year in graduate work at the University of Minnesota.

Burnett Sanford has become forester for the Sugar Pine Lumber Co., of California, which has a mill near Fresno and large camps 60 miles distant in the Sierra. Mr. Sanford was formerly connected with the Madera Sugar Pine Co.

E. W. Hadley, who until a few months ago was assistant silviculturist of the Southern Forest Experiment Station, has resigned his position as assistant State forester of Georgia. Mr. Hadley and his brother, W. C. Hadley, have gone into private consulting work as forest engineers, with headquarters at Brunswick, Ga.

Francis H. Eyre has reported at Washington as assistant in the office of forest experiment stations, United States Forest Service. Mr. Eyre was graduated from the University of Michigan in 1922 and since then had served continuously in the national forests of the intermountain district, recently as assistant supervisor of the Wasatch Forest.

Charles Edgar Randall, jr., has been appointed to the Washington staff of the United States Forest Service for work in the preparation of press material. After graduation from Leland Stanford University Mr. Randall went to Oregon Agricultural College as a teaching fellow in botany, and later he served nearly three years with the Bureau of Plant Industry in blister rust control work. He has had several years of newspaper experience in Washington and elsewhere.

Edwin Jahn, of the 1925 class of the New York State College of Forestry, has been awarded a fellowship in McGill University, established for the purpose of carrying on a study in cellulose chemistry.

Allen Thompson, resident forester of the city of Seattle, has been granted a year's leave of absence to continue his forestry studies at Yale. Mr. Thompson was graduated from the College of Forestry of the University of Washington in 1924.

R. F. Taylor, technical assistant on the Tongass National Forest, is spending the present school year at the Yale Forest School studying plant ecology, research methods, and forest management.

Harold J. Lutz, after graduation from the Yale Forest School in June of this year, is to join the staff of the Connecticut Agricultural Experiment Station, at Storrs, Conn. He will be employed chiefly on research work in forest ecology in connection with the forest-soils project now under way there. Mr. Lutz was graduated from the Michigan State College in 1924 and was for two years a technical assistant on the Chugach National Forest, Alaska.

George D. Pratt has been reelected president of the American Forestry Association, and George O. Vass treasurer.

Officers elected by the Society of American Foresters in December to serve for one year are: President, R. Y. Stuart; vice president, R. T. Fisher; secretary, J. H. Fahrenbach; treasurer, S. B. Detwiler. Aldo Leopold was elected to the executive council of the society for a term of five years. New officers of sections of the society are as follows:

Ohio Valley Section—chairman, Charles C. Deam; secretary, Burr N. Prentice; member of executive committee, E. V. Jotter. Allegheny Section—chairman, F. W. Besley; vice chairman, John F. Preston; and secretary-treasurer, H. F. Round. Wisconsin Section—chairman, C. V. Sweet; secretary, F. G. Wilson. California Section—secretary, F. S. Baker.

Officers elected in February by the Maryland Forestry Association are: President, DeCourcy W. Thom; vice presidents, G. M. Gillett, Mrs. Jas. H. Dorsey, C. R. Disharoon, J. Harris Franklin, and H. Arthur Stump; and secretary-treasurer, W. McCulloh Brown. Directors elected at the same time are Mrs. Albert Sioussat and H. S. Clopper.

Officers elected by the Pennsylvania Forestry Association to serve during the year 1927 are: President, Dr. Henry S. Drinker; vice presidents, Robert S. Conklin, J. Freeman Hendricks, Mrs. David Reeves, and Samuel L. Smedley; general secretary, Samuel Marshall; recording secretary and treasurer, F. L. Bitler.

Bibliography

Bibliography of Tropical Woods

A publication that should be of the greatest value to everyone interested in the forests and forest products of the Tropics, and especially Latin America, is the "Bibliography of the Woods of the World, with Emphasis on Tropical Woods," recently prepared by George P. Ahern and Helen K. Newton of the Tropical Plant Research Foundation. This bibliography, which was prepared for the Research Committee of the American Society of Mechanical Engineers, is a revision and extension of the previous compilation by Professor Record of the Yale Forest School. Of the 1,341 titles, approximately half deal with tropical America.

Valuable features are the index to special woods and subjects, and the key letters indicating the places where most of the references can be consulted. Of the first edition, which is mimeographed, only a small number of copies was prepared. It is planned to issue a more complete edition (probably printed) some time in 1927, and supplementary lists annually thereafter.

The compilers are desirous of receiving corrections and additions from anyone who may care to offer them. Suggestions should be sent to Maj. George P. Ahern, Tropical Plant Research Foundation, 1350 B Street SW., Washington, D. C.

Forest Fires in Maine

This report, prepared by Forest Inspector C. R. Tillotson under the provisions of the Clarke-McNary law, deals particularly with conditions outside the Maine forestry district. Within the forestry district, of which 10,000,000 acres are forested, the State has an efficient organization of chief wardens, deputy wardens, patrolmen, and fire-lookout observers. A system of 68 lookout stations and a telephone system are constantly being added to and improved. Although improvements could be made in the system inside the forestry district, no attempt is made to outline them in view of the outstanding need outside the district, which is not being satisfied.

Outside the forestry district the suppression of forest fires and law enforcement in regard to them are practically dependent upon the town officers or upon deputy fire wardens whom the town officers are authorized but not obliged to appoint. Although this has advantages if the town officers are interested and efficient, it does not work out well on the whole.

The important measures recommended in the report are as follows:

1. The forest commissioner should have authority, upon petition or upon his own volition, to designate fire districts in which forest fire control will be handled by the State. One-half the expense of suppression should be charged back against the town or county.
2. Provision should be made by law requiring motor vehicles to be equipped with permanently fixed devices for holding burnt matches and burning tobacco.
3. The system of fire observation stations should be extended.
4. Poor towns should be assisted in the purchase of forest fire fighting equipment. The State should also maintain at one or two centrally located points fire pumps for loan to towns hard pressed by fires.
5. If legal authority exists, the State should take over the job of apprehending and prosecuting violators of the forest fire laws in the towns.
6. The State nurseries should be increased in size, or provision should be made with commercial nurseries to supply small trees at a reasonable cost.
7. More stress should be laid upon educational efforts, particularly in the schools and boys' and girls' camps.

"Investigation into the Progress of Height Growth of Trees"

The results of a study of tree growth conducted over a period of 27 years at the Swiss Forest Research Institute at Zurich have just been published by Dr. Hans Burger. In all some 194,100 measurements were made on 2,912 plants growing in three localities. The more important of Doctor Burger's conclusions as reported in the *Indian Forester* for December, 1926, are as follows:

Height growth in a given year is less closely related to the weather conditions in that year than to the reserve food supplies accumulated during the previous year, although the duration of height growth is dependent upon the weather of the current year. Height growth depends largely upon locality (this influence being more pronounced in hardwoods than in conifers), varies with age, and is greatly influenced by the source of the seed. Few species, apparently, are able to utilize the full climatic possibilities of the growing season.

The progress of height growth during the growing season closely parallels the temperature curve, rainfall affecting it irregularly and only through influence on temperature—except, perhaps, in dry years. Neither amount of sunlight nor atmospheric humidity affects rate of growth, except as it affects temperature. Over any extended period, growth is less affected by external influences than by the characteristics of the individual species.

Nature Study Program

Facts about nature and suggestions for nature activities for every day in the year are given in a new publication entitled "A Nature Almanac for 1927," by William G. Vinal, of the New York State College of Forestry at Syracuse. Every community of 25,000 population or more should have a nature program, according to Doctor Vinal, and it should be a year-round program, with a competent nature guide for a leader. He gives suggestions in regard to starting such a program and putting it into successful operation. The book is a mine of practical and interesting information and suggestions, and is printed on opaque, white paper that makes it pleasant to handle and to read.

Recent Books and Pamphlets

- American Tree Association: Forestry legislative survey, January 1, 1927. 67 pp. Washington, D. C., 1927.
- Chamber of Commerce of the United States, Natural Resources Production Department: Commercial forestry and the community. 47 pp. diags. Washington, D. C., 1926.
- Cline, A. C.: The marketing of lumber in New Hampshire, 1925. 80 pp. (Harvard Forest Bulletin No. 10.) Petersham, Mass., 1926.
- Dupont, G.: Les essences de térébenthine. 332 pp. illus., diags., maps. Masson & Cie., Paris, 1926.
- Graham, S. A.: Biology and control of the white-pine weevil, *Pissodes strobi* Peck. 32 pp. illus., diags. (Cornell University Agricultural Experiment Station Bulletin 449.) Ithaca, N. Y., 1926.
- Gutmann, O.: Durchforstungsversuche in fichtenbeständen. 92 pp., diags. Druck J. Pichimeyr, Moosburg, 1925.
- Henry, A., and McIntyre, M.: The swamp cypresses, *Glyptostrobus* of China and *Taxodium* of America, with notes on allied genera. 27 pp. pl. Hodges, Figgis & Co. Dublin, 1926.
- Hobbs, V. Sparks: Fire prevention rhymes, stories, and playlets. 171 pp., illus. Pioneer Publishing Co., Fort Worth, Tex., 1926.
- Howard, S. H.: A system of filing information on forestry. 31 pp., illus. International Institute of Agriculture, Rome, 1926.
- Korstian, C. F.: The economic development of the furniture industry of the South and its future dependence upon forestry. 26 pp. pl. Raleigh, N. C., 1926. (North Carolina Department of Conservation and Development, Economic paper No. 57.)
- Minnesota Agricultural Experiment Station: Tables for determining contents of standing timber in Minnesota, Michigan, and Wisconsin. 99 pp. (Technical bulletin 39.) St. Paul, 1926.
- Mulford, F. L.: Trees for roadside planting. 50 pp., illus. (U. S. Department of Agriculture, Farmers' Bulletin No. 1482.) Washington, D. C., 1926.
- New York Conservation Commission: Municipal or community forests, by H. F. Prescott. 47 pp., illus. Albany, N. Y., 1926.
- Schorger, A. W.: The chemistry of cellulose and wood. 596 pp., illus. McGraw-Hill Book Co., N. Y., 1926.
- Telford, C. J.: Third report on a forest survey of Illinois. 102 pp., map. (Illinois Department of Registration and Education, division of the Natural History Survey. Bulletin, vol. 16, art. 1.) Urbana, Ill., 1926.

- U. S. Department of Commerce: The marketing of short-length lumber: First report of the construction subcommittee of the National Committee on Wood Utilization. 28 pp., illus., diags. Washington, D. C., 1926.
- Wildeman, E. de: Les forêts congolaises et leurs principales essences économiques. 214 pp., map. Goemaëdure, Imprimeur de Roi. Bruxelles, 1926.

Articles in Periodicals

- Allgemeine Forst- und Jagd-zeitung, Nov., 1926.—Vorrat und altersklassenverhältnis als bestimmenden faktoren der ertragsregelung, by Hans Waldbauer, pp. 409-413.
- Ecology, Oct., 1926.—Some relations of plant ecology to silvicultural practice, by Carlos G. Bates, pp. 469-480.
- Forstwissenschaftliches Centralblatt, Sept. 1, 1926.—Die ergebnisse langfristiger ertragsoersuche, by Gerhard Reinhold, pp. 628-642. Nov. 1, 1926.—Zur frage der erziehung junger fichtenbestände, by Josef Bohdanecky, pp. 777-783; Dec. 15, 1926.—Der wuchs der eiche in abhängigkeit von dem gewicht der eicheln.
- Indian Forestry, Nov., 1926.—The inheritance of growth form in trees, by H. G. Champion, pp. 567-570; Dec., 1926.—Relation of rate of growth to strength in timber, by L. N. Seaman, pp. 619-625.
- Journal of Forestry, Nov., 1926.—A universal index to wood, by E. H. F. Swain, pp. 725-755; Theoretical considerations regarding factors which influence forest fires, by L. F. Hawley, pp. 756-763. Dec., 1926.—Studies of white pine blister rust in the West, by H. G. Lachmund, pp. 874-884; The problem of blister rust control in California, by Stephen N. Wyckoff, pp. 885-892; The western pine beetle control problem, by J. M. Miller, pp. 897-910.
- Official Record, U. S. Department of Agriculture, Dec. 8, 1926.—New gall-rust disease may be menace to pine, pp. 1-2.
- Paper Mill and Wood Pulp News, Oct. 16, 1926.—Paper history of New England, by H. P. Baker, pp. 20-28.
- Progressive Farmer, Georgia-Alabama edition, Nov. 13, 1926.—"Treat timber as a crop," a slogan for all timber owners, by C. Poe, p. 5; Before you sell your timber, by H. M. Curran, p. 12.
- Quarterly Journal of Forestry, Oct., 1926.—The ecological approach to silviculture, by A. S. Watt, pp. 313-322.
- Schweizerische Zeitschrift für Forstwesen, Nov., 1926.—50 jahre eidgenössische gesetzgebung; rückblick und ausblick, pp. 281-293.
- Southern Lumberman, Dec. 18, 1926.—Trees of the South, pp. 147-162; The commercial woods of the South, pp. 163-179; Naval stores: A key to industry, by C. Wernicke, pp. 184-186; The painting characteristics of woods, by F. L. Browne, pp. 219-220.

Recent Publications of the Forest Service

- Farmers' Bulletin 1517, Loblolly Pine Primer.
- Miscellaneous Circular 66, Identification of Furniture Woods.
- Map Folders: San Bernardino; Sierra; Angeles; Umatilla—South Half; Chiricahua National Monument; Central Appalachian National Forest Motorways.
- National Forest Administrative Maps: $\frac{1}{4}$ inch, Flathead, Florida, Fremont, Montezuma, and St. Joe; $\frac{1}{2}$ inch, Beaverhead, Cache, Kaibab, and Washakie.